REMARKS

Claims 1-2, 4-6, 8-13, 16-18, 20-24 and 31-36 are pending in this application. By this Amendment, claims 1, 4-6, 9, 13 and 16-18 are amended, claims 3, 7, 14-15, 19 and 25-30 are canceled without prejudice or disclaimer and new claims 31-36 are added. Various amendments are made for clarity and are unrelated to issues of patentability.

Applicants confirm that an election was made with traverse to prosecute Group I, claims 1-24. New claims 31-36 correspond to the elected group.

The Office Action rejects claim 9 under 35 U.S.C. §112, second paragraph. It is respectfully submitted that the above amendments obviate the grounds for rejection. Withdrawal of the rejection is respectfully requested.

The Office Action rejects claims 13 and 20-23 under 35 U.S. C. §102(b) by U.S. Patent Publication 2002/0060084 to Hilton et al. (hereafter Hilton). The Office Action also rejects claims 1-2, 7-11, 14 and 19 under 35 U.S.C. §103(a) over Hilton in view of U.S. Patent 6,288,451 to Tsao. The Office Action also rejects claims 3, 4, 15 and 16 under 35 U.S.C. §103(a) over Hilton, Tsao and further in view of U.S. Patent 4,329,385 to Banks et al. (hereafter Banks). The Office Action rejects claims 5, 6, 17 and 18 under 35 U.S.C. §103(a) over Hilton, Tsao, Banks and further in view of U.S. Patent 4,298,443 to Maydan et al. (hereafter Maydan). Still further, the Office Action rejects claim 12 under 35 U.S.C. §103(a) over Hilton, Tsao and U.S. Patent Publication 2003/0109080 to Dias. The Office Action also rejects claim 24 under 35 U.S.C. §103(a) over Hilton in view of Dias. The rejections are respectfully traversed with respect to the pending claims.

Independent claim 1 recites selecting a protective area of a substrate, performing a selective sputtering process to a surface of the substrate to provide a first surface roughness over a first area of a substrate and to provide a second surface roughness over the selected protective area of the substrate, the second surface roughness being smoother than the first surface roughness. Independent claim 1 also recites the selective sputtering process including using a mask to cover the selected protective area of the substrate during the selective sputtering process.

The applied references do not teach or suggest at least these features of independent claim 1. More specifically, the applied references do not teach or suggest performing a selective sputtering process to a surface of the substrate to provide a first surface roughness over a first area and to provide a second surface roughness over the selected protective area where the second surface roughness is smoother than the first surface roughness. The applied references also do not teach or suggest that the selective sputtering process including using a mask to cover the selected protective area of the substrate during the selective sputtering process.

Hilton discloses that a treated region 340 may be formed of a material such as a polymer, metal, ceramic or combination thereof so as to increase a surface area contact. Hilton does not teach or suggest that the second surface roughness (over the selected protective area) is smoother than the first surface roughness (over the first area).

Tsao discloses that a roughened surface may be formed on a top surface 18 of a printed circuit board (PCB) 14 by providing a multiplicity of recesses 30 as compared to a

smoother surface on an active (or die) surface 16 of an IC chip 12. Tsao does not teach a different surface roughness over the area of the substrate and/or a smoother surface over a selected protective area of a substrate. There is no suggestion to provide Tsao's teaching over different areas of a single substrate. Rather, Tsao teaches a roughened surface to provide a mechanical interlock. This clearly differs from Hilton's treated region 340. Thus, the alleged combination is improper. Further, Tsao does not teach or suggest performing a selective sputtering process where the selective sputtering process includes using a mask to cover the selected protective area of the substrate during the selective sputtering process. Tsao does not relate to a mask. Rather, Tsao very clearly describes that the recesses 30 are provided by use of dimples 32 and/or by providing surface grooves 36. See, for example, col. 6, lines 12-51 and FIGs. 2-3.

Banks merely discloses that sputtering may be used on a fluorocarbon polymer 10 to form a rough surface. This does not teach or suggest the missing features of independent claim 1. Further, Banks does not teach or suggest performing a selective sputtering process to provide a first surface roughness and to provide a second surface roughness where the second surface roughness is smoother than the first surface roughness. Banks also does not teach or suggest the selective sputtering process includes using a mask to cover the selected protective area of the substrate during the selective sputtering process.

For at least the reasons set forth above, Hilton, Tsao and Banks do not teach or suggest all the features of independent claim 1. The other applied references do not teach

or suggest the features of independent claim 1 missing from the other applied references. Further, the combination of references is based on impermissible hindsight as there is no suggestion in the prior art to make the combination. Thus, independent claim 1 defines patentable subject matter.

Independent claim 13 recites selective sputtering a surface of the substrate using a mask to provide a first surface roughness over the die placement area of a substrate and to provide a second surface roughness over a protective area over the substrate between the die placement area and the keep out area, the second surface roughness being smoother than the first surface roughness.

For at least similar reasons as set forth above, the applied references do not teach or suggest at least these features of independent claim 13. More specifically, the applied references do not teach or suggest selective sputtering a surface of the substrate using a mask to provide a first surface roughness over the die placement area of a substrate and to provide a second surface roughness over a protective area over the substrate between the die placement area and the keep out area, the second surface roughness being smoother than the first surface roughness. Thus, independent claim 13 defines patentable subject matter.

Still further, independent claim 33 recites performing a selective chemical etching process to a surface of the substrate to provide a first surface roughness over a first area of a substrate and to provide a second surface roughness over the selected protective area

of the substrate, the second surface roughness being smoother than the first surface roughness.

For at least similar reasons as set forth above, the applied references do not teach or suggest at least these features of independent claim 33. The Office Action cites Hilton's paragraph [0014] for features relating to etching. However, the cited paragraph does not relate to Hilton's FIG. 3 described at paragraph [0030]. Additionally, the Office Action (on page 7) references Tsao's col. 6, lines 26-27 as teaching chemical etching. However, there is no suggestion of how Tsao may be combined with Hilton to reach the claimed features of the first surface roughness and second surface roughness. Thus, independent claim 33 defines patentable subject matter.

For at least the reasons set forth above, each of independent claims 1, 13 and 33 defines patentable subject matter. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-2, 4-6, 8-13, 16-18, 20-24 and 31-36 are earnestly solicited. If the Examiner believes that any additional

changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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